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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,653	07/02/2004	Masanobu Mizusaki	70404.27	2884

54072 7590 11/13/2006

SHARP KABUSHIKI KAISHA
C/O KEATING & BENNETT, LLP
8180 GREENSBORO DRIVE
SUITE 850
MCLEAN, VA 22102

EXAMINER

THOMPSON, CAMIE S

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 11/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/500,653	Applicant(s) MIZUSAKI ET AL.	
	Examiner Camie S. Thompson	Art Unit 1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-34 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 18-34 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/2/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heeger et al., U.S. Patent Number 6,534,329.

Heeger discloses visible light emitting devices having a layer of conjugated polymer (see column 5, lines 1-25). Additionally, the Heeger reference discloses that the conjugated polymers are aligned structures, which led to the LED emitting polarized light. Heeger also discloses that the conjugated polymers can include polyphenylene vinylene and MEH-PPV, which are macromolecules (hyperbranched polymers). Heeger does not disclose the degree of alignment. The reference does disclose that the polymers are aligned in order to emit polarized light. Therefore, it would have been obvious to one of ordinary skill in the art to have the conjugated polymers of the Heeger reference have a degree of alignment of 0.95 in order to have the light emitting device emit polarized light.

3. Claims 18-23 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heeger et al., U.S. Patent Number 6,534,329 in view of Jang et al., *Dendritic Physical Gel: Hierarchical Self-organization of a Peptide core Dendrimer to Form a Micrometer Scale Fibrous Assembly*.

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Heeger discloses visible light emitting devices having a layer of conjugated polymer (see column 5, lines 1-25). Additionally, the Heeger reference discloses that the conjugated polymers are aligned structures, which led to the LED emitting polarized light. Heeger also discloses that the conjugated polymers can include polyphenylene vinylene and MEH-PPV, which are macromolecules (hyperbranched polymers). The reference does disclose that the polymers are aligned in order to emit polarized light. Therefore, it would have been obvious to one of ordinary skill in the art to have the conjugated polymers of the Heeger reference have a degree of alignment of 0.95 in order to have the light emitting device emit polarized light. Also, Heeger does not disclose that the hyperbranched polymers are self-organized. Jang discloses hyperbranched macromolecules that have three-dimensional shapes and have self-assembly by hydrogen bonding and electrostatic interactions (see page 3232). The hydrogen bonding and the electrostatic interactions allow for the polymer to have an alignment of 0.95 or more. Therefore, it would have been obvious to one of ordinary skill in the art to have the conjugated polymers of the Heeger reference have self-assembly through hydrogen bonding and electrostatic interactions in order to have an LED that emits polarized light.

4. Claims 18, 24-25 and 29-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heeger et al., U.S. Patent Number 6,534,329 in view of Jang et al., *Dendritic Physical Gel: Hierarchical Self-organization of a Peptide core Dendrimer to Form a Micrometer Scale Fibrous Assembly* and in further view of Slater, Jr. et al., U.S. Pre Grant Publication 2005/0194603.

Heeger discloses visible light emitting devices having a layer of conjugated polymer (see column 5, lines 1-25). Additionally, the Heeger reference discloses that the conjugated polymers are

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aligned structures, which led to the LED emitting polarized light. Heeger also discloses that the conjugated polymers can include polyphenylene vinylene and MEH-PPV, which are macromolecules (hyperbranched polymers). The reference does disclose that the polymers are aligned in order to emit polarized light. Therefore, it would have been obvious to one of ordinary skill in the art to have the conjugated polymers of the Heeger reference have a degree of alignment of 0.95 in order to have the light emitting device emit polarized light. Also, Heeger does not disclose that the hyperbranched polymers are self-organized. Jang discloses hyperbranched macromolecules that have three-dimensional shapes and have self-assembly by hydrogen bonding and electrostatic interactions (see page 3232). The hydrogen bonding and the electrostatic interactions allow for the polymer to have an alignment of 0.95 or more. Therefore, it would have been obvious to one of ordinary skill in the art to have the conjugated polymers of the Heeger reference have self-assembly through hydrogen bonding and electrostatic interactions in order to have an LED that emits polarized light.

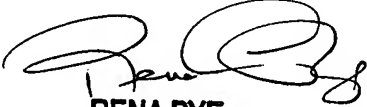
Heeger does not disclose having a wall structure. Slater, Jr. discloses light emitting diodes that include a barrier layer provided on a reflector layer and extending on a sidewall of the reflector layer (see Figure 12 and paragraph 0069). Also, the Slater, Jr. reference discloses that the barrier layer can comprise dendritic structure (see paragraph 0067). The use of a wall structure in a light emitting device prevents short circuitry. Therefore, it would have been obvious to one of ordinary skill in the art to use a wall structure in the Heeger reference in order to prevent short circuits across the diode.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Camie S. Thompson whose telephone number is (571) 272-1530. The

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examiner can normally be reached on Monday through Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena L Dye, can be reached at (571) 272-3186. The fax phone number for the Group is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


RENA DYE
SUPERVISORY PATENT EXAMINER
Art Unit 1774
11/1/04